

Amendments to the Specification

Please amend the following paragraphs as indicated below:

[0002] In mobile phones the operational input provided by the user in order to control the operation of the mobile phone is generally provided by keys in a keypad. For example a telephone number is usually dialed dialed by pressing dialing dialling keys. However, there are situations when it would be reasonable for example to select a telephone number or to provide some other control commands by using a system where it is not necessary to use the keys in the keypad.

[0003] US-B1-6,314,166 presents a method for dialing dialling a telephone number by voice commands, i.e. without pressing keys in a keypad. Thus the user can select a telephone number by simply speaking it to the microphone of the mobile phone. The electric signal generated by the microphone is amplified in a microphone amplifier, filtered in a filter and digitized by a Analog to Digital-Converter (ADC) or alternatively digitized by a audio Coding and Decoding unit (CODEC) and thereafter voice recognition is performed on the resulting digital audio signal by a recognizer unit, typically a Digital Signal Processor (DSP), in order to parse the various commands, names, letters and numbers used in Voice Dialing Dialling.

[0005] The mobile phone can also be used as a conventional mobile phone, wherein the dialing dialling of the telephone number can be performed by using the keypad in the usual manner. In the voice controlled mode audio signals are received via the microphone, amplified in the microphone amplifier, filtered and digitized and conducted in digital form to the recognizer unit. On the basis of the audio signal received, the recognizer unit calculates the corresponding one or several feature vectors which are processed by the recognizer unit in order to find out which command or number was uttered by the user. This kind of "key-free" operation mode is very useful for example in automobiles as so-called hands-free modes, wherein the driver of the vehicle does not need to loose hold of the steering wheel for dialing dialling a telephone number.

[0006] However, voice recognition is relatively complicated and prone to recognition errors in a noisy environment, for example where the voices of other persons can be heard.

Therefore the voice recognition for voice dialing dialling is normally only activated when needed, otherwise normal ongoing conversations might trigger embarrassing embarrassing or costly calls. Thus the initiating of voice control mode like voice dialing dialling is seldom done by voice commands. The preferred method has been to use a special button to initiate voice control mode. However, in modern cellular phones the trend is to have as few buttons as possible. Thus the same button is used as a soft key for many purposes depending on the functional mode. Finding the right key combinations without looking at the keys or the display is not easy and by itself negates the convenience of voice dialing dialling in prior art mobile phones.

[0007] The object of the present invention is to eliminate the disadvantages of the prior art and to provide a new type of a user interface for portable telecommunications devices. The invented user interface can be used to initiate for example voice dialing dialling or any other function in a mobile telecommunication device. It can also be used to initiate a further step from a set of further steps possible at a certain point in the execution of a state machine type of functional control. Typically one choice in a menu can be activated by the invented user interface.

[0008] The present invention is based of electrically detecting when the user moves or shakes the terminal. FIG. 5 depicts a previous user movement detector as disclosed by U.S. Pat. No. 6,195,571. A metallic weight 51 is affixed to the free end of a vibration plate 52 and if the vibration excursions exceed the separation to one of the contacts 54, 55 an electric circuit 53 is grounded as indication of vibration or movement. The described component, in the example given by U.S. Pat. No. 6,195,571, is used in addition to a vibrating device that provides the tactile vibrations for silent call announcing announceiation. Such added component incurs extra expenditure and also takes up space.

[0009] The present invention is based on the use of electromechanical actuators, such as vibrators, which are common components in portable telecommunication devices, and which typically are provided with a small DC motor driving an eccentric weight. When the device, such as a mobile phone, is moved rapidly, for example shaken, the eccentric weight will turn

the rotor of electric motor. This movement of the rotor induces a small inductive voltage, typically approximately 10 mV, in the stator coil. This induced voltage can be measured and used as a control signal for controlling a desired operation, such as switching the telecommunication device to a specific mode, such as voice command mode. The user interface according to the present invention is thus ~~characterized~~ ~~characterised~~ by the fact that a common actuator already existing in the portable telecommunication device, is used 'reversely', by measuring an electric signal when the device is shaken or moved otherwise by the user in a corresponding manner.

[0021] FIG. 1 illustrates a cellular phone, mobile terminal or a media terminal 20 with a keypad 22 and a vibrator unit 25 that is contained within the enclosure and where vibration is generated by an eccentric weight 24 attached to the vibrator shaft that in this example is parallel with the side of the terminal. Other locations and directions of the vibrator shaft can be envisaged as well. With the direction of the vibrator shaft as shown, the vibrations mainly takes place in the plane depicted by the arrows 26. The vibrator 25 is controlled by a control unit 21 and is also connected to a measuring unit 23. FIG. 2 illustrates the vibrator unit with the eccentric mass 12, that is rotated by the electric motor 13 when a vibratory effect is desired, for example to silently ~~announce~~ ~~annunciate~~ an in-coming call. FIG. 3 illustrates another vibrator, with a more flat form factor made possible by the use of a pancake motor 14 driving the eccentric mass 15. The operation of the described vibrators are basically similar.

[0032] The inputs of the sensitive differential amplifier 63 in the measuring unit are protected from the high solenoid or stator winding voltages by using high impedance resistors 64 connected to the drivelines 76, 77 of the solenoid or vibrator 75. The output of the amplifier 63 is connected to a ~~threshold~~ ~~threshold~~ detector 62, and the output signal of the ~~threshold~~ ~~threshold~~ detector can be used for a desired control operation, such as switching a telecommunications device to a specific mode. During active operation of the vibrator the output 61 can be defeated.

[0036] The drive means 70 can also be arranged to brake the vibrator at the end of a vibrative ~~announcement~~ ~~annunciation~~. The final braking position can advantageously be the preferred

idle position or one of the preferred idle positions. The braking action is used in two ways. The first is to dampen any remaining oscillations and thus prepare the vibrator for immediate user input. The other is to stop a rotary vibrator at a preferred position.

[0037] One advantage with the second aspect of the invention is that there is no situation where movement in a prescribed direction will not generate a voltage in the coil, and no special arrangements are needed to ensure a certain idle rotational position. However, the linear vibrators has one plane in which it is insensitive for user commands. This can be mitigated by mounting the whole assembly to pivot ~~asymmetrically~~ unsymmetrically when subjected to such force. The resulting vector of the original force can then be detected.

[0039] Only the absolute value is used for the purpose of the invention, although it can be envisaged that in certain applications it could be advantageous to detect the initial shaking direction using a modified ~~threshold~~ threshold detector 62 with two outputs 61, one for each direction.